CLAIMS

1. A method of image processing an image in a camera module having an image sensor recording an image, said method including the steps of:

capturing an image from said image sensor;

storing said image in image storage memory in a planarized linear RGB form; and

transforming said image from planarized linear RGB form to L*a*b* form.

2. The method of claim 1 further including the step of transmitting said L*a*b* form image on a bus of a compact printer system.

3. The method of claim 1 wherein the step of capturing said image includes the step of linearizing said image from said image sensor.

4. The method of claim 3 wherein the step of inearizing is performed via a lookup table.

5. The method of claim 1 further including the step of generating a histogram of image data for each image color plane.

6. The method of claim 1 wherein the step of transforming said image includes the steps of;

white balance and range expansion;

resampling;

color conversion; and

sharpening.

7. The method of claim 6 wherein the step of white balance and range expansion requires correction of each pixel value using the formula:

Pixel' = (Pixel – LowThreshold) x RangeScaleFactor

where *RangeScaleFactor=256/(HighThreshold – LowThreshold)*

8. The method of claim 6 wherein the step of resampling generates a full RGB form image from available data.

9. The method of claim 6 wherein the step of color conversion coverts the full RGB form image to an L*a*b* form image.

10. The method of claim 6 wherein the step of color conversion coverts the full RGB form image to an L*a*b* form image by tri-linear interpolation.

11. The method of claim 6 wherein the step of sharpening requires highpass filtering of L* data of the L*a*b* form image.

12. An image processor for a camera module having an image sensor that captures an image, said image processor comprising:

a central processing unit;

program memory associated with said central processing unit, said program memory storing program steps for execution by said central processing unit to operate said camera module to capture said image;

one or more interface units communicating with components of said camera module;

image storage memory storing said image;

an image capture unit in communication with said image storage memory, said central processing unit and said image sensor, said image capture unit capturing said image from said image sensor and storing said image in said image storage memory; and

image processing units in communication with said image storage memory to transform said image for transmission by a serial bus interface.

13. The image processor of claim 12 wherein said image processor is an application specific integrated circuit.

14. The image processor of claim 12 further comprising scratch memory associated with said central processing unit for variable storage.

15. The image processor of claim 12 wherein said serial bus interface communicates with a Serial Bus of a compact printer system including one or more further modules, said Serial Bus communicating power and data between said camera module and said one or more further modules.

16. The image processor of claim 15 wherein said data includes image data transformed by said image processing units.

17. The image processor of claim 12 wherein said central processing unit is a micro-controller running at about 1 Mhz.

18. The image processor of claim 12 wherein at least one of said one or more interface units is a parallel interface unit communicating with a take button for initiating capture of an image by said image capture unit.

19. The image processor of claim 12 wherein said image storage memory is less than 1 Mbytes.

20. The image processor of claim 19 wherein said image storage memory is approximately 0.5 Mbytes.

21. The image processor of claim 12 wherein said program memory is no greater than 8 Kbytes.

22. The image processor of claim 14 wherein said scratch memory is no greater than 2 Kbytes.

23. The image processor of claim 12 wherein said image processing units include an image histogram unit and an image enhancement unit.

24. The image processor of claim 23 wherein said image enhancement unit includes a white balance and range expansion unit, resample unit, color conversion unit and a sharpen unit.